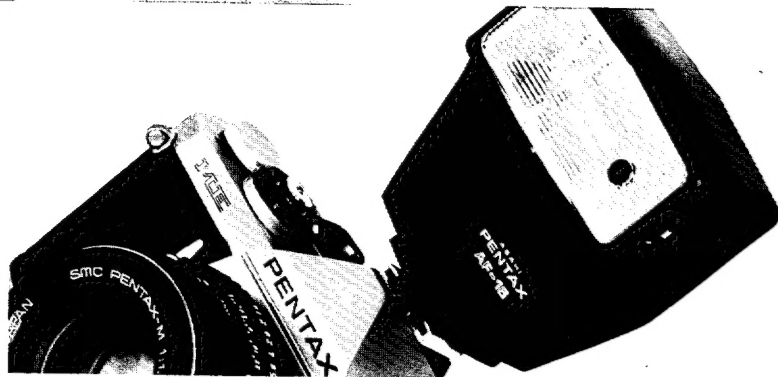


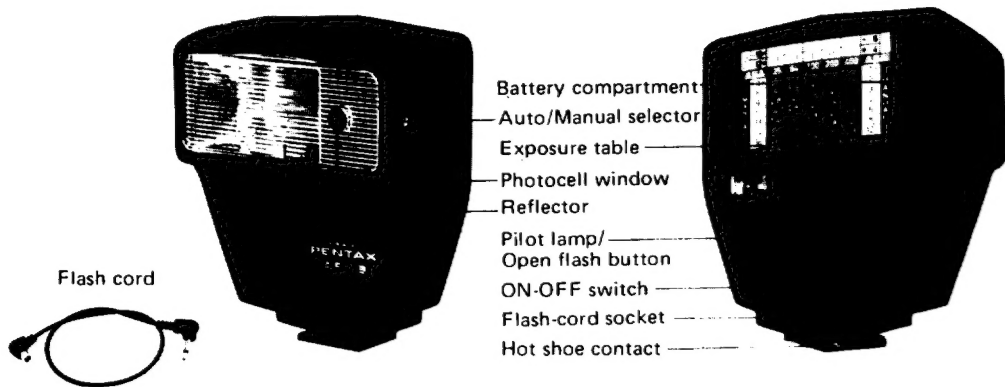
ASAHI
PENTAX

AF-16

AUTOMATIC ELECTRONIC FLASH UNIT



NAMES OF PARTS



SPECIFICATIONS

Type:	Clip-on electronic flash unit (with hot-shoe contact)
Guide number	32 (ASA 400 in meters) 16 (ASA 100 in meters)
Flash control:	Automatic; with two-way output selection
Flash range:	Red setting: 0.5m (1.54 ft.) - 4m (13.12 ft.) Blue setting: 1.0m (3.28 ft.) - 6m (19.68 ft.)
Sensor reception angle:	20° (silicon photo-diode)
Angular spread:	48° vertical; 65° horizontal (for up to a 28mm wide-angle lens)
Flash duration:	1/40,000 - 1/4000 sec.
Color temperature:	Equivalent to daylight
Recycle time:	approx. 6 sec. with alkaline batteries, 8 sec. with manganese batteries
Number of flashes:	Alkaline batteries (approx. 200) manganese (approx. 40)
Power source:	Two 1.5V AA-size penlight batteries
Other features:	Open flash button, Automatic flash output stabilizer, Pilot lamp, Color-coded exposure table
Dimensions:	65mm (width) x 78mm (height) x 41mm (depth)
Weight:	102g (3.5 oz.) without batteries
Accessories:	Flash cord

FEATURES OF THE AF-16

The AF-16 was designed for today's camera—compact, light and efficient. It features an electronic "eye" which measures the light reflected from the subject and controls the flash brilliance for correct exposures. Thus, there's no more fussing with figures — anyone can get perfect flash pictures everytime. Moreover, the AF-16 can be used with any camera. With its light-weight and dynamic design, it balances well with the camera and permits film rewind while it is mounted to the camera.

AF-16 FLASH CONTROL

The AF-16 features two-way output selection. Even when you change the distance between the subject and the camera while the subject is within the effective flash range, correct exposure can be obtained without changing the f-number.

FULL AND EVEN LIGHTING OVER A WIDE-SPREAD AREA

The AF-16 easily takes care of the narrow spread of illumination required for a standard lens, and more. Its illumination spreads over a wide area to offer full and ample coverage for a 28mm lenses, thus giving rich and well illuminated flash pictures.



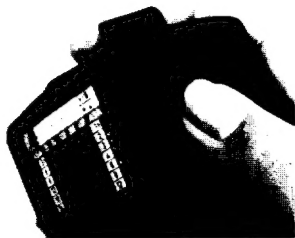
SETTING UP

INSERTING BATTERIES

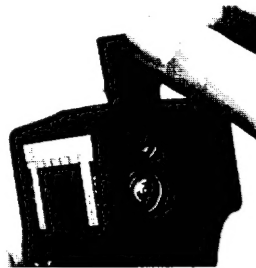
1) Slide the battery compartment cover located on the right side of the AF-16 open as shown in the photo. Insert two penlight batteries in accordance with the polarity symbols on the inside of the battery compartment.

2) Slightly depress the batteries and slide the battery lid closed.

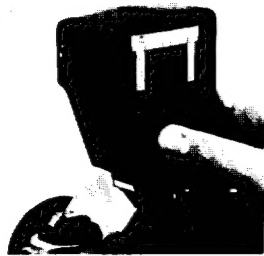
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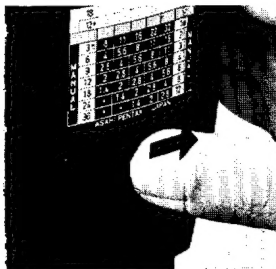


TEST YOUR UNIT BEFORE FILM LOADING

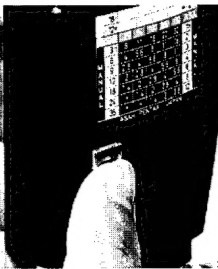
1) Turn the power switch to ON. Soon you will hear a faint whine which indicates that the unit is charging. The pilot lamp will come on in a few seconds; then, the charging sound will cease. At this point, test the flash circuit by pressing the open flash button with your finger.

2) After the unit has flashed, it will immediately begin to recycle. The next time the pilot lamp comes on, press the camera's shutter release button. If the flash and the shutter synchronize everything is fine. If not, check that the unit is mounted properly or that the flash cord is connected properly, if you are using one.

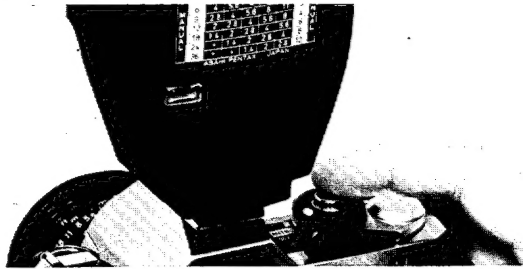
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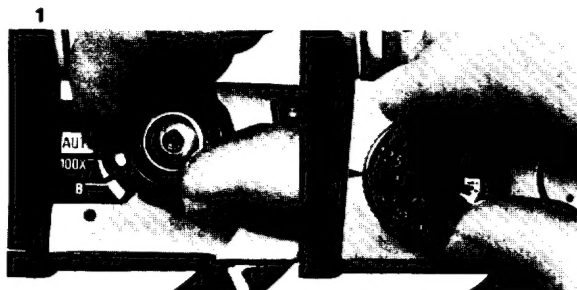


SHOOTING

1) Set the shutter speed dial to the "X" setting for flash synchronization.

- With the AF-16, you can choose to expose in either full or half frame. In a half frame exposure, only the top half of the frame is exposed. In a full frame exposure, the entire frame is exposed. To set the shutter speed dial to the "X" setting, turn the dial to the "X" setting. The dial is marked with "X" and "1/1000". The exposure table is provided for the easy viewing.

2) The AUTO section of the table on the back of the AF-16 permits a choice of two f-numbers, which differ according to the film's ASA rating. For close and intermediate distances use the red setting; for longer distances use the blue setting. For example, if you are using ASA 400 film the f-number to use at the red setting



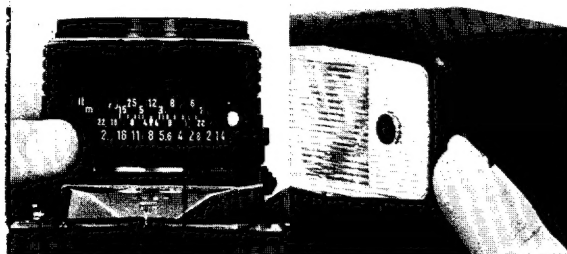
2

~18•	2	2.8	4	5.6	8	•~6
~12•	2	2.8	4	5.6	8	•~4
ASA	25	64	100	200	400	ASA
3ft	8	11	16	22	32	1m
6	4	5.6	8	11	16	2
M						M

is $f/8$; for the blue setting it is $f/5.6$. The exact range of flash effectiveness at either setting is indicated by the figures in light green at the ends of the AUTO table.

3) Next, set the camera's aperture ring to the f-number indicated on the table and the output selector on the side of the AF-16 to the dot matching the color of the f-number chosen.

3

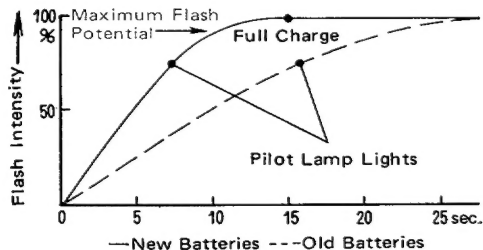


4) Switch the power on, advance the film and wait for the pilot lamp to come on. The capacitor will reach peak charge, shortly after the pilot lamp comes on.

Focus and press the shutter when ready.

* Although the AF-16 will flash sufficiently if fired immediately after the pilot lamp comes on, it is best to wait a moment or so longer for a higher flash.

4



MANUAL OPERATION

2) When using the AF-16 on MANUAL, the lower section of the exposure table is employed for computing the correct f-number based on subject distance and ASA film speed.

If the subject is 2 meters (6 feet) away and you are using ASA 100 film, for example, pick out the number in the ASA 100 column which corresponds to the subject distance. Thus, the f-number to use is f/8.

2

~12'							~4'
	3ft	8	11	16	22	32	1m
MANUAL	6	4	5.6	8	11	16	2
	9	2.8	4	5.6	8	11	3
	12	2	2.8	4	5.6	8	4
	18	1.4	2	2.8	4	5.6	6
	24	•	1.4	2	2.8	4	8
	36	•	•	1.4	2	2.8	12

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3) Set the aperture ring of your camera to the f-number indicated by the exposure table and then set the output dial on the side of the unit to "M".

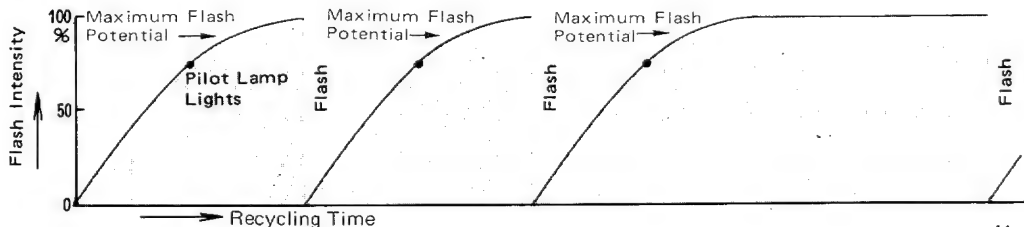
* The computed f-number is effective as long as the subject remains at the same distance. Each time you shoot at a different distance, however, refer to the exposure table and compute a new f-number. Adjust the camera's aperture ring accordingly.



4) Turn the power switch on and focus. Shoot any time after the pilot lamp comes on. After the exposure is completed the unit will immediately begin charging. This is known as recycling, which is the time it takes to convert the low-voltage from the batteries into the high-voltage needed for electronic flash.

When not using the AF-16 for long intervals, turn off the power switch to save batteries. Recycling stops when the unit reaches peak charge; however, the charge will gradually fall off. If the power switch is left on battery energy will be used constantly to restore the charge to its peak.

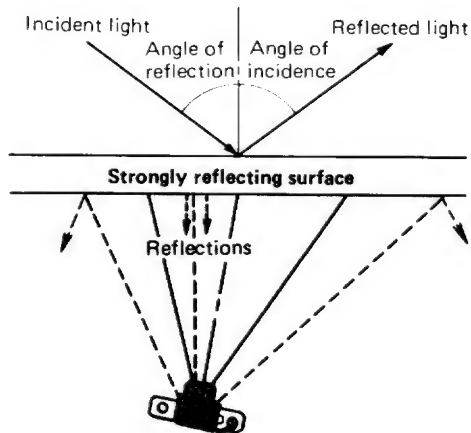
4



GENERAL POINTERS

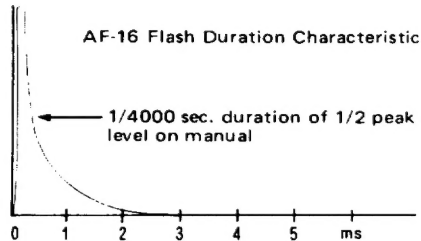
GUARD AGAINST UNEXPECTED REFLECTIONS

The direction in which light is reflected off an object is shown in the illustration. It is not always possible to actually see these reflections, but precautions can be taken against them. Do not shoot directly into highly reflective surfaces as the reflections will be picked up by the lens. Even when shooting at an angle, care should be taken to reduce reflections. Non-white and non-glare backgrounds are suitable for direct flash, while backgrounds such as glass windows and white walls will produce a high-glare. For beautiful prints without glare, angle your camera so that the flash doesn't rebound into the lens.



BATTERY PRECAUTIONS

- Remove batteries when not using the flash unit for long periods of time. Batteries tend to leak if left long in the unit and may cause serious damage.
- When the pilot lamp no longer lights within 60 seconds after the power switch is turned on, or when the charging sound can no longer be heard, it is time to replace batteries. The unit may still flash even though the pilot lamp no longer lights, but such flash is insufficient for correct exposure.
- Battery performance tends to deteriorate with batteries that are left lying around for long periods of time. Make it a point to use batteries that are fairly new.
- The AF-16 is not designed for use with Ni-Cd batteries, which have different characteristics and different voltage ratings.
- Batteries are very sensitive to cold and performance will deteriorate at temperatures near freezing. Performance is restored completely as soon as the batteries are subjected to normal temperatures. Keep a set of warm spare batteries in your pocket when shooting in freezing weather; substitute them when the others get cold.
- Batteries will perform better if allowed to rest. When doing a lot of shooting, turn the power switch off intermittently, even when the unit is charged, to rest batteries.



FLASH DURATION

The duration of the flash at the half peak value is a very fast $1/4000$ sec., which in dark place is equivalent to the extremely fast shutter speed of $1/4000$ sec. Consequently, camera movement will not blur images and very sharp and clear pictures will be obtained.

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QUALITY (COLOR TEMPERATURE)

The color 'cast' or temperature of the AF-16 is $5,800^{\circ}\text{K}$ (Kelvin) which is compatible with that of normal daylight. Tungsten light bulbs have a temperature of $2,800^{\circ}$ and the evening sun is $3,200^{\circ}\text{K}$. Thus, electronic flash has a higher temperature than tungsten bulbs and can be used freely with daylight films in rooms lit by tungsten bulbs without producing a reddish cast.

DISTANCE/LIGHT INTENSITY

Brightness (light intensity) drops off as distance from the lighting source increases. As brightness drops off with the square of the distance from the light source to the subject, light intensity at a distance of 2 meters from the camera will only be $1/4$ of the value it is at 1 meter. Thus, all else being equal, objects two meters from the camera

will require four times the exposure as those 1 meter from the camera.

LIGHT SOURCE	3' 1m	6' 2m	(DISTANCE)
	1	1/4	(INTENSITY)

GUIDE NUMBER

The guide number is the measure of the brightness of the flash in relation to the subject distance. Guide numbers vary depending upon the ASA rating of the film being used. To calculate the guide number in meters, multiply the distance in meters by the f-number. For the guide number in feet, multiply the distance in feet by the f-number.

Although all of the practical exposure data needed for operating the AF-16 is computed in the exposure table, guide numbers for the exposures given in the table as well as for some additional ASA speeds are listed below.

CAMERAS WITH LENS SHUTTERS

When using the AF-16 with lens shutter cameras, shutter speeds below 1/250 should be used. Lens shutters include simple snap-shot cameras, range-finders and some large format cameras. If both X and M synch terminals are provided, use the X-synch terminal.

ASA	25	32	64	100	125	160	200	400	800	1600	3200
G. No. m	8	9	13	16	18	20	22	32	44	64	87
ft	24	27	39	48	54	60	66	96	132	192	264



ASAHI OPTICAL CO., LTD. C.P.O. 895, Tokyo 100-91, JAPAN

ASAHI OPTICAL EUROPE N.V. Weiveldlaan 3-5, 1930 Zaventem, BELGIUM

PENTAX Handelsgesellschaft mbH. 2000 Hamburg 54 (Lokstedt), Grandweg 64, WEST GERMANY

ASAHI OPTICAL BRASILEIRA IND. E COM. LTDA. Rua Estados Unidos, 1053, Sao Paulo-SP, BRASIL

PENTAX CORPORATION 9 Inverness Drive East, Englewood, Colorado 80110, U.S.A.